CHAPTER 5
PROJECTS AND MANAGEMENT ACTIONS

5.1 INTRODUCTION TO PROJECTS AND MANAGEMENT ACTIONS

Projects and management actions have been developed to meet the sustainability goal, measurable objectives, and undesirable results identified for the Las Posas Valley Basin (LPVB) in Chapter 3, Sustainable Management Criteria, of this Groundwater Sustainability Plan (GSP). In the West Las Posas Management Area (WLPMA), chronic declines in groundwater elevation and associated loss of storage, along with the potential for low groundwater elevations to adversely impact seawater intrusion in the aquifers of the Upper Aquifer System and Lower Aquifer System in the Oxnard Subbasin, have been identified as the undesirable results that will have the greatest impact on beneficial uses of groundwater. In the East Las Posas Management Area (ELPMA), chronic declines in groundwater elevation, loss of storage, and the potential for subsidence related to groundwater withdrawal are the undesirable results that were identified as having the potential to impact beneficial uses of groundwater.

Projects were developed in the WLPMA and the ELPMA to address the potential undesirable results in these management areas. The projects listed in this chapter were proposed by stakeholders, selected for inclusion in the GSP through a process by the Operations Committee of the Fox Canyon Groundwater Management Agency (FCGMA) Board of Directors (Board), and approved for inclusion in the GSP by the FCGMA Board. The criteria for including a project in the GSP included the following:

- Sufficient project information is available for evaluation and modeling.
- Project increases sustainable yield, or reduces groundwater demand.
- Project implementation is planned within 20 years.
- Project meets GSP Emergency Regulations Section 354.44 criteria.
- There is an agency proponent for the project.
- Funding for the project is identified.

The Operations Committee determined that one project in the WLPMA and two projects in the ELPMA met these criteria. The WLPMA project incorporated the purchase of 1,762 acre-feet per year (AFY) of imported water from Calleguas Municipal Water District (CMWD). This water would be delivered to the eastern part of the WLPMA in lieu of groundwater production. In the ELPMA, one project involves removing giant reed (*Arundo donax*; also called Arundo) in the Arroyo Simi–Las Posas watershed, and the other project involves purchasing wastewater discharges and de-watering well discharges from the City of Simi Valley to maintain flow in

Arroyo Simi–Las Posas. These three projects were incorporated into the future model scenarios to the extent possible (see Section 2.4.5, Projected Future Water Budget and Sustainable Yield). The inclusion of these projects does not constitute a commitment by the FCGMA Board to construct or fund the projects, but rather signals that these projects were sufficiently detailed to be included in groundwater modeling efforts that examined the quantitative impacts of the projects on groundwater elevations and the sustainable yield of the Las Posas Valley Basin (LPVB). As currently envisioned, the projects in this GSP would be implemented by the project proponent or sponsoring agency. However, FCGMA may opt to implement projects in the future as necessary to achieve sustainability in the LPVB. Additionally, all projects undertaken in the LPVB will need to be approved and permitted by all relevant regulatory agencies. These agencies may include, but are not limited to, the Regional Water Quality Control Board and the State Water Resources Control Board.

As discussed in Chapter 2, Basin Setting, of this GSP, groundwater modeling was used to evaluate projected water budget conditions and potential impacts to beneficial uses and users of groundwater in the basin. Without the type of projects described below, substantially greater reductions in groundwater production will be needed to meet the sustainability goal for the basin, which would lead to significant economic disruption and prevent groundwater in the basin from being put to beneficial use to the fullest extent possible. In addition to the projects discussed in this chapter, the FCGMA Board has the authority to implement management actions to ensure that the LPVB does not experience undesirable results. The primary management action that can be implemented by the FCGMA Board is restrictions on groundwater production. This authority was granted to the FCGMA Board in the enabling legislation that formed the FCGMA, and this action has been undertaken in the past to eliminate overdraft.

It is anticipated, and recommended, that FCGMA will evaluate, model, and conduct feasibility studies of other projects for achieving sustainable groundwater management for the 5-year update to this GSP to optimize basin management and minimize extraction restrictions.

5.2 PROJECT NO. 1 – PURCHASE OF IMPORTED WATER FROM CMWD FOR BASIN REPLENISHMENT

5.2.1 Description of Project No. 1

The Purchase of Imported Water from CMWD for Basin Replenishment Project (Purchase of Imported Water from CMWD Project) would supply imported water to the eastern part of the WLPMA in lieu of groundwater production (FCGMA 2018). This project would directly result in decreased groundwater production from discrete wells in the WLPMA. This project is limited to water purveyors with ability to receive water from CMWD (FCGMA 2018).

5.2.2 Relationship of Project No. 1 to Sustainability Criteria

Supply of purchased imported water in lieu of groundwater production was included in future groundwater modeling scenarios to examine the impact that the project will have on the sustainability criteria (see Section 2.4.5). The future model scenarios also incorporated projects in the Oxnard Subbasin and the Pleasant Valley Basin, both of which are in the same model domain as the WLPMA. Because the future scenarios incorporated multiple projects, the impact of this project independent of the others was not quantified. Rather, the potential effect of this project in the context of all of the projects is presented in this discussion.

Relationship to Minimum Thresholds

As modeled, the Purchase of Imported Water from CMWD Project reduced production from the WLPMA by 1,762 AFY (see Section 2.4.5). The numerical groundwater model simulation of the Future Baseline With Projects Scenario, which incorporates potential future projects including the Purchase of Imported Water from CMWD Project, results in higher groundwater elevations than the Future Baseline Scenario, which does not incorporate projects (see Section 2.4, Water Budget). This suggests that the project will assist with water level recovery in the WLPMA. Furthermore, historical deliveries of imported water in lieu of groundwater production have resulted in groundwater elevation recoveries in the eastern WLPMA (see Section 2.3, Groundwater Conditions). Therefore, this project is anticipated to have a direct impact on groundwater elevations and could be used to help maintain elevations above the minimum thresholds defined in Chapter 3.

Relationship to Measurable Objectives

The relationship of the Purchase of Imported Water from CMWD Project to the measurable objectives is similar to its relationship with the minimum thresholds. By reducing groundwater production and increasing groundwater elevations, the Purchase of Imported Water from CMWD Project could be used to help the WLPMA meet the measurable objective water levels defined in Chapter 3.

5.2.3 Expected Benefits of Project No. 1

The Purchase of Imported Water from CMWD Project will benefit the WLPMA by reducing the groundwater production from the WLPMA without limiting the total quantity of water available to beneficial uses and users of the WLPMA (FCGMA 2018).

5.2.4 Timetable for Project No. 1

The project does not require construction of new facilities, and CMWD has completed its California Environmental Quality Act (CEQA) compliance review (FCGMA 2018). No additional permits would be needed to implement this project. Therefore, the project could be implemented after agreements have been completed for the purchase and delivery of the water from CMWD.

5.2.5 Metrics for Evaluation of Project No. 1

The metric for evaluation of the Purchase of Imported Water from CMWD Project will be the volume of groundwater that is not produced from wells that would have been pumped if the in-lieu water had not been delivered. FCGMA has required groundwater production reporting since 1983. Historical groundwater production rates will be compared to groundwater production rates during participation in the in-lieu delivery program to ensure compliance and reduction in groundwater production. If the project is implemented, the base period for the historical groundwater production rates will need to be determined.

5.2.6 Economic Factors and Funding Sources for Project No. 1

The funding source for this project is anticipated to be replenishment fees collected by FCGMA. A pumper would buy water from CMWD and FCGMA would reimburse the pumper for the net cost to purchase imported water. The cost of this project would depend on the amount of water purchased from CMWD. It is anticipated that water would be purchased at the Tier 1 rate, which is currently $1,423 per acre-foot of water.

Any action taken by the FCGMA Board, acting as the Groundwater Sustainability Agency for the portion of the LPVB in its jurisdiction, to impose or increase a fee shall be taken by ordinance or resolution. Should the FCGMA Board decide to fund a project through imposition of a replenishment fee, FCGMA will hold at least one public meeting, at which oral or written presentations may be made. Notice of the meeting will include an explanation of the fee to be considered and the notice shall be published pursuant to Section 6066 of the Government Code.[1] At least 20 days prior to the meeting, the Groundwater Sustainability Agency will make the data on which the proposed fee is based available to the public.

[1] Publication of notice pursuant to Section 6066 of the Government Code: "shall be once a week for two successive weeks. Two publications in a newspaper, published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates are sufficient."

5.3 PROJECT NO. 2 – ARROYO SIMI–LAS POSAS ARUNDO REMOVAL

5.3.1 Description of Project No. 2

The Arroyo Simi–Las Posas Arundo Removal Project involves removing the invasive plant species Arundo from approximately 324 acres of land along the Arroyo Simi–Las Posas corridor (FCGMA 2018). Arundo would be replaced with native riparian plant species, which are estimated to consume approximately 6 to 25 AFY per acre less water than Arundo. If all of the Arundo within the 324-acre area is removed, this project could result in up to an additional 2,680 AFY of recharge to the ELPMA (FCGMA 2018). This project is anticipated to have a positive impact on groundwater recharge, as well as a positive impact on the health of riparian habitat along Arroyo Simi–Las Posas.

5.3.2 Relationship of Project No. 2 to Sustainability Criteria

Surface water infiltration through the bottom of Arroyo Simi–Las Posas is a primary recharge mechanism for the ELPMA. Arundo that lines the banks of Arroyo Simi–Las Posas consumes more water than native riparian vegetation would. Therefore, removing Arundo will make additional water available to recharge the groundwater aquifers of the ELPMA. The effect of this additional recharge was investigated in the numerical groundwater model simulation of the ELPMA that included projects (see Section 2.4.5). Two projects were incorporated in these simulations: Arroyo Simi–Las Posas Arundo Removal and acquisition of wastewater and shallow dewatering well discharge to maintain perennial flow in Arroyo Simi–Las Posas (see Section 5.4, Project No. 3 – Arroyo Simi–Las Posas Water Acquisition). Because both of these projects were incorporated in the same model simulation, the impact of the Arroyo Simi–Las Posas Arundo Removal Project alone was not quantified. Therefore, the results and impacts on the minimum thresholds and measurable objectives discussed in this section are presented in the context of the cumulative project impacts from both of the projects modeled.

Relationship to Minimum Thresholds

As modeled, the Arroyo Simi–Las Posas Arundo Removal Project eliminated approximately 1,900 AFY of evapotranspiration (ET) losses within the model domain and incorporated the additional reduction of ET upstream of the model domain as increased surface water flow into the ELPMA along Arroyo Simi–Las Posas (see Section 2.4.5). The numerical groundwater model simulation of the Future Baseline With Projects Scenario, which incorporates the Arroyo Simi–Las Posas Arundo Removal Project, resulted in higher simulated groundwater elevations than the Future Baseline Scenario, which did not incorporate projects (see Section 2.4). The higher elevations were simulated in all aquifers of the ELPMA except the Epworth Gravels Aquifer, which does not receive recharge from Arroyo Simi–Las Posas. Additionally, the impact

of this project on groundwater elevations was greater in the southern part of the ELPMA, adjacent to Arroyo Simi–Las Posas. In wells in the northern part of the ELPMA, the combined effects of the Arroyo Simi–Las Posas Arundo Removal Project and the Arroyo Simi–Las Posas Water Acquisition Project were not sufficient to maintain groundwater elevations above the minimum threshold after 2040. In the southern part of the ELPMA, the combined projects maintained groundwater elevations above the minimum thresholds throughout the 50-year model run. Therefore, this project is anticipated to have a direct impact on groundwater elevations and could be used to help maintain elevations above the minimum thresholds defined in Chapter 3 throughout much, but not all, of the ELPMA.

Relationship to Measurable Objectives

The relationship of the Arroyo Simi–Las Posas Arundo Removal Project to the measurable objectives is similar to its relationship with the minimum thresholds. By increasing surface water flow in Arroyo Simi–Las Posas and decreasing ET losses from invasive species that currently line the Arroyo Simi–Las Posas, the ELPMA is anticipated to receive more recharge along Arroyo Simi–Las Posas. Although this recharge alone is insufficient to maintain groundwater elevations above the measurable objectives throughout the ELPMA at the 2015–2017 average groundwater production rate, it will lessen groundwater pumping reductions necessary to maintain groundwater elevations close to the measurable objectives water levels defined in Chapter 3.

5.3.3 Expected Benefits of Project No. 2

The Arroyo Simi–Las Posas Arundo Removal Project has multiple benefits for the ELPMA. Fundamentally, this project would help maintain groundwater elevations in Arroyo Simi–Las Posas and directly addresses the aspirational measurable objectives selected for improving conditions in the ELPMA (see Section 3.5.2, East Las Posas Management Area). Additionally, agricultural users of groundwater in the ELPMA will benefit from this project because it increases the sustainable yield of the management area. This project also provides benefits to environmental users of groundwater. Arundo has been characterized as one of the greatest threats to riparian resources of coastal Southern California (Bell 1997). Removal of Arundo from riparian reaches of Southern California streams has provided downstream benefits for native species habitat, water quantity, water quality, and wildfire protection (Bell 1997).

5.3.4 Timetable for Project No. 2

CEQA compliance has already been completed for this project, but permits are likely to be required from the Ventura County Watershed Protection District, Los Angeles Regional Water Quality Control Board, California Department of Fish and Wildlife, and U.S. Army Corps of Engineers (FCGMA 2018). Limitations on implementing the project include securing funding, although this project is a good candidate for securing outside funding and would not necessarily rely solely on

replenishment fees. Additionally, the project implementation will be limited to seasons during which Arundo may be removed, and time periods during which use of mechanical equipment is allowed. Depending on whether the project is implemented in phases and when it receives the necessary permits, the project is anticipated to take approximately 1 to 2 years to complete (FCGMA 2018).

5.3.5 Metrics for Evaluation of Project No. 2

The metric for evaluation of the Arroyo Simi–Las Posas Arundo Removal Project will be the flow in Arroyo Simi–Las Posas downstream of the Arundo removal sites and the health of the native riparian habitat. If a suitable stream gauge is not in place to quantify flow in the Arroyo Simi–Las Posas, one should be installed as part of this project so the benefits can be measured and monitored.

5.3.6 Economic Factors and Funding Sources for Project No. 2

The funding source for this project is anticipated to be grant funds from outside agencies that support restoration of native plant habitat and flood control benefits, replenishment fees collected by FCGMA, or a combination of grant funding and replenishment fees. The cost of this project would depend on the acreage of Arundo removed. The estimated capital cost is approximately $7,400,000, with an annual operations and maintenance cost of $200 per acre-foot of water.

Any action taken by the FCGMA Board to impose or increase a fee shall be taken by ordinance or resolution, and notice shall be provided of any meeting at which imposition of the ordinance or resolution will be discussed (see Section 5.2.6, Economic Factors and Funding Sources for Project No. 1).

5.4 PROJECT NO. 3 – ARROYO SIMI–LAS POSAS WATER ACQUISITION

5.4.1 Description of Project No. 3

The Arroyo Simi–Las Posas Water Acquisition Project would involve the purchase of recycled water from the City of Simi Valley (Simi Valley) (FCGMA 2018). In return, Simi Valley would commit to continuing to discharge the purchased or leased water from its shallow dewatering wells or the Simi Valley Water Quality Control Plant to Arroyo Simi–Las Posas for downstream recharge to the LPVB. Simi Valley has indicated that 3,000 AFY of recycled water from the Simi Valley Water Quality Control Plant would be available and 1,700 AFY would be available from the dewatering wells (FCGMA 2018). However, due to the riparian use of the water along the Arroyo Simi–Las Posas, an estimated 1,000 to 2,500 AFY of the water may be lost due to plant uptake and evaporation, leaving 2,200 to 3,700 AFY available as surface flow and recharge to the ELPMA.

5.4.2 Relationship of Project No. 3 to Sustainability Criteria

Acquisition of water for ongoing discharge to Arroyo Simi–Las Posas would help sustain groundwater elevations in the ELPMA by continuing to provide recharge to the groundwater aquifers. The sustainability criteria in the ELPMA are primarily based on limiting storage loss throughout the management area. This project would assist with maintaining storage in the management area, as well as maintaining a sustainable yield that is closer to the recent groundwater production rate than it is to the long-term historical average.

The effect of the Arroyo Simi–Las Posas Water Acquisition Project was investigated in the numerical groundwater model simulation of the ELPMA that included projects (see Section 2.4.5). The Arundo removal project was included in the same model scenario (see Section 5.3, Project No. 2 – Arroyo Simi–Las Posas Arundo Removal). Because both of these projects were incorporated in the same model simulation, the impact of the Arroyo Simi–Las Posas Water Acquisition Project alone was not quantified. Therefore, the results and impacts on the minimum thresholds and measurable objectives discussed in this sections are presented in the context of the cumulative project impacts from both of the projects modeled.

Relationship to Minimum Thresholds

As modeled, the Arroyo Simi–Las Posas Water Acquisition Project maintained approximately 4,700 AFY of surface water flow into the ELPMA along Arroyo Simi–Las Posas (see Section 2.4.5). The numerical groundwater model simulation of the Future Baseline With Projects Scenario, which incorporates the Arroyo Simi–Las Posas Water Acquisition Project, resulted in higher simulated groundwater elevations than the Future Baseline Scenario, which does not incorporate projects (see Section 2.4). The higher elevations were simulated in all aquifers of the ELPMA except the Epworth Gravels Aquifer, which does not receive recharge from Arroyo Simi–Las Posas. Additionally, the impact of this project on groundwater elevations was greater in the southern part of the ELPMA, adjacent to Arroyo Simi–Las Posas. In wells in the northern part of the ELPMA, the combined effects of the Arroyo Simi–Las Posas Water Acquisition Project and the Arroyo Simi–Las Posas Arundo Removal Project were not sufficient to maintain groundwater elevations above the minimum threshold after 2040. In the southern part of the ELPMA, the combined projects maintained groundwater elevations above the minimum thresholds throughout the 50-year model run. Therefore, this project is anticipated to have a direct impact on groundwater elevations and could be used to help maintain elevations above the minimum thresholds defined in Chapter 3 throughout much, but not all, of the ELPMA.

Relationship to Measurable Objectives

The relationship of the Arroyo Simi–Las Posas Water Acquisition Project to the measurable objectives is similar to its relationship with the minimum thresholds. By maintaining surface

water flow in Arroyo Simi–Las Posas, the ELPMA is anticipated to continue to receive recharge along Arroyo Simi–Las Posas that might otherwise be sold or leased to water users outside of the ELPMA. Although this recharge alone is insufficient to maintain groundwater elevations above the measurable objectives throughout the ELPMA if groundwater production continues at the 2015–2017 average production rate, it will lessen groundwater pumping reductions necessary to maintain groundwater elevations close to the measurable objectives water levels defined in Chapter 3.

5.4.3 Expected Benefits of Project No. 3

Surface water infiltration through the bottom of Arroyo Simi–Las Posas is a primary recharge mechanism for the ELPMA. Perennial flow in Arroyo Simi–Las Posas did not begin until the 1970s, when discharges of treated wastewater effluent, and eventually discharge from shallow dewatering wells, began upstream of the ELPMA boundary. These perennial flows resulted in rising groundwater levels throughout the southern part of the ELPMA between 1974 and 2015. The beneficial users of surface water and groundwater in the ELPMA do not have control over the upstream discharges of water to Arroyo Simi–Las Posas, and recharge to the ELPMA would be reduced if those discharges are reduced. Therefore, purchase of this discharge would provide a measure of security for the users of groundwater and surface water in the ELPMA. Fundamentally, this project would help maintain groundwater elevations in Arroyo Simi–Las Posas and directly addresses the aspirational measurable objectives selected for improving conditions in the ELPMA (see Section 3.5.2). Additionally, this project would maintain native habitat and provide flood control benefit.

Although perennial surface water flow has provided recharge to the ELPMA, this flow is also thought to be the primary source of rising total dissolved solids (TDS) concentrations observed in the groundwater adjacent to Arroyo Simi–Las Posas since the 1990s (see Section 2.3). Consequently, if this project is pursued further, the water quality of the surface water flows will have to be investigated further and addressed in the feasibility study.

5.4.4 Timetable for Project No. 3

As proposed, the project does not require construction of new facilities. Because of this, the project proponent suggests that the project is ready to start and could be completed within 1 to 2 years (FCGMA 2018). Permitting of this project without addressing the water quality of the surface water flows may prove challenging. If the water quality of the surface water flows is an impediment to implementing the project, then a treatment facility may need to be constructed, which would delay implementation of the project.

5.4.5 Metrics for Evaluation of Project No. 3

The metric for evaluation of the Arroyo Simi–Las Posas Water Acquisition Project will be the volume of surface water that flows into the ELPMA as a result of the project. Depending on the eventual project details a stream gauge may need to be installed in Arroyo Simi–Las Posas at an appropriate location to measure these flows.

5.4.6 Economic Factors and Funding Sources for Project No. 3

The funding source for this project is anticipated to be replenishment fees collected by FCGMA. These fees may be augmented by grant funding to maintain habitat along Arroyo Simi–Las Posas. The cost of this project depends on a negotiated purchase price for the recycled water from Simi Valley.

Any action taken by the FCGMA Board to impose or increase a fee shall be taken by ordinance or resolution, and notice shall be provided of any meeting at which imposition of the ordinance or resolution will be discussed (see Section 5.2.6).

5.4.7 Project No. 3 Uncertainty

The primary uncertainty associated with the Arroyo Simi–Las Posas Water Acquisition Project is the quality of the water that will be purchased. The concentration of TDS and other constituents in the discharge water may be a hindrance to project permitting, which would necessitate a feasibility study to investigate the cost and benefit of constructing a facility to treat the water before it is used to supply groundwater users with surface water in lieu of groundwater production or used for direct recharge to the management area.

5.5 MANAGEMENT ACTION NO. 1 – REDUCTION IN GROUNDWATER PRODUCTION

5.5.1 Description of Management Action No. 1

The primary management action proposed under this GSP is Reduction in Groundwater Production from the LPVB. FCGMA has had the authority to monitor and regulate groundwater production in the LPVB since 1983. The FCGMA Board has used its authority to reduce groundwater production from the LPVB in the past, and will continue to exert its authority over groundwater production as a Groundwater Sustainability Agency for the LPVB.

In the WLPMA, the estimated long-term rate of groundwater production that will prevent chronic declines in groundwater levels, loss of storage, and subsidence due to groundwater withdrawal and will also allow the prevention of seawater intrusion in the Oxnard Subbasin, is approximately 11,500 AFY with an estimated uncertainty of approximately ±1,200 AFY (see Section 2.4.5). In the ELPMA the estimated long-term rate of groundwater production that will prevent chronic

declines in groundwater levels, loss of storage, and subsidence due to groundwater withdrawal is approximately 17,800 AFY ±2,300 AFY (see Section 2.4.5).

Reductions in groundwater production were modeled for both the ELPMA and the WLPMA in order to investigate their impact on the sustainability indicators in the LPVB. Reductions were modeled as a linear decrease from the 2015–2017 production rates. In the WLPMA, the modeled groundwater production rates were lower than the estimated sustainable yield calculated based on all of the model scenarios (see Section 2.4.5). In the ELPMA, a range of reductions was modeled to estimate the safe yield of the management area. The exact reductions that will be implemented in the LPVB over the next 5 years will be determined by the FCGMA Board based on the data collected and analyzed for this GSP. These reductions will be evaluated based on the potential paths to reaching sustainability discussed in Chapter 3.

5.5.2 Relationship of Management Action No. 1 to Sustainability Criteria

Reducing groundwater production in the LPVB has a measurable impact on groundwater elevations in both the ELPMA and the WLPMA. Groundwater elevations, in turn, are a measure of groundwater in storage in the LPVB; in the WLPMA, they are a measure of influence on seawater intrusion in the Oxnard Subbasin. The effect of reduced groundwater production on groundwater level elevations was simulated using a numerical groundwater model for each management area of the LPVB (see Section 2.4.5). The United Water Conservation District model was used to simulate groundwater elevations in the WLPMA and the adjacent Oxnard Subbasin. The CMWD model was used to simulate groundwater elevations in the ELPMA. The results of the model simulations and the relationship between reduced groundwater production and the sustainability criteria are discussed in this section.

Relationship to Minimum Thresholds

When groundwater production in the WLPMA was reduced from the 2015–2017 average production rates, simulated future groundwater elevations in the management area recovered to elevations that remained above the minimum threshold after 2040 (see Section 2.4.5). The long-term production rate necessary to maintain groundwater elevations above the minimum threshold depended on several factors, including the simulated future climate, the quantity of surface water available to recharge the WLPMA, and implementation of the Purchase of Imported Water from CMWD Project (see Section 5.2, Project No. 1 – Purchase of Imported Water from CMWD for Basin Replenishment). Therefore, the numerical groundwater simulation results suggest a range of potential reductions in groundwater production that will maintain groundwater elevations above the minimum thresholds in the WLPMA. The range is anticipated to change as additional data are collected and additional projects are implemented over the next 5 years. Therefore, any

reductions implemented by the FCGMA Board over the initial 5-year period after the GSP is adopted will be evaluated and may be changed as warranted by future conditions in the WLPMA and the adjacent Oxnard Subbasin.

When groundwater production in the ELPMA was reduced from the 2015–2017 average production rates, simulated future groundwater elevations in the management area remained above the minimum threshold after 2040 (see Section 2.4.5). The long-term production rate necessary to maintain groundwater elevations above the minimum threshold depended on several factors, including the simulated future climate. However, the primary factors influencing groundwater elevations in the ELPMA are groundwater production and the quantity of surface water available to recharge the ELPMA via Arroyo Simi–Las Posas. Therefore, the numerical groundwater simulation results suggest a range of potential reductions in groundwater production that will maintain groundwater elevations above the minimum thresholds in the ELPMA, depending on which projects are undertaken. The range is anticipated to change as additional data are collected and project details are further evaluated over the next 5 years. Therefore, any reductions implemented by the FCGMA Board over the initial 5-year period after the GSP is adopted will be evaluated and may be changed as warranted by future conditions in the ELPMA.

Relationship to Measurable Objectives

The relationship between Reduction in Groundwater Production and the measurable objectives is similar to the relationship between Reduction in Groundwater Production and the minimum thresholds in both the WLPMA and the ELPMA. Numerical groundwater model simulations suggest a range of potential groundwater production rates that would result in groundwater elevations that are higher than the measurable objective half of the time and lower than the measurable objective half of the time in the WLPMA, and can be maintained close to the measurable objective water levels in the ELPMA (see Section 3.5, Measurable Objectives). As discussed above, this range is anticipated to change as additional data are collected, additional projects are implemented, and project details are further evaluated over the next 5 years. Therefore, any reductions implemented by the FCGMA Board over the initial 5-year period after the GSP is adopted will be evaluated and may be changed as warranted by future conditions in the LPVB and adjacent basins.

5.5.3 Expected Benefits of Management Action No. 1

The primary benefit related to Reduction in Groundwater Production is maintaining groundwater elevations at levels that prevent chronic declines in groundwater elevation, loss of storage, and land subsidence due to groundwater withdrawal. Reduction in Groundwater Production can be used to close any differential between groundwater elevations that can be obtained through

implementation of projects and the groundwater elevations necessary to meet the sustainability goal for the LPVB.

5.5.4 Timetable for Implementation of Management Action No. 1

The FCGMA Board already has the authority to reduce groundwater production in the LPVB. Therefore, reductions can be implemented within months of GSP adoption, once the proposed reductions have gone through the FCGMA Board approval process.

5.5.5 Metrics for Evaluation of Management Action No. 1

The metric for evaluation of reduced groundwater production will be groundwater elevations in the aquifers of the WLPMA and the ELPMA. As groundwater elevations recover or stabilize, additional projects are developed, and basin management is optimized, groundwater production rates will continue to be evaluated and adjusted accordingly.

5.5.6 Economic Factors and Funding Sources for Management Action No. 1

Program administration, investigations, inspections, compliance assistance, and enforcement of the Reduction in Groundwater Production management action will rely on funding from pumping fees imposed by FCGMA. Economic factors that will affect Reduction in Groundwater Production include impacts to users of groundwater in the LPVB. Potential economic impacts to stakeholders will be considered in the decision process for selecting future groundwater production rates and reductions necessary to meet the sustainability goal for the LPVB.

5.5.7 Management Action No. 1 Uncertainty

There is uncertainty in the exact reductions in groundwater production required to achieve the sustainability goals for the WLPMA and ELPMA. Uncertainty in the hydrogeologic conceptual model and the numerical groundwater model is discussed in Chapter 2. Uncertainty in the minimum thresholds and measurable objectives is discussed in Chapter 3. Chapters 2 and 3 also discuss uncertainty associated with the future location of groundwater production and impacts of projects that will optimize management of the LPVB and adjacent basins.

Because of the existing uncertainty associated with future conditions in the LPVB, a plan for exact reductions and groundwater elevation triggers for those reductions has not been developed as part of this GSP. Instead, FCGMA will work to develop and refine this plan over next 20 years as the level of uncertainty is reduced. FCGMA recognizes that a specific long-term plan that incorporates stakeholder feedback and the need for flexibility in groundwater management will have to be

adopted by 2040 to provide users of groundwater in the LPVB with the tools necessary to plan for sustainable groundwater production into the future.

5.6 REFERENCES CITED

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